



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/567,772	02/09/2006	Masatoshi Kuwajima	4386.77746	5367
24978 7590 04/10/2009 GREER, BURNS & CRAIN 300 S WACKER DR 25TH FLOOR CHICAGO, IL 60606				
EXAMINER				
FISCHER, JUSTIN R				
ART UNIT		PAPER NUMBER		
1791				
MAIL DATE		DELIVERY MODE		
04/10/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/567,772

**Applicant(s)**

KUWAJIMA, MASATOSHI

**Examiner**

Justin R. Fischer

**Art Unit**

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 April 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-5 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-5 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/CDC)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date: \_\_\_\_\_

## DETAILED ACTION

### ***Continued Examination Under 37 CFR 1.114***

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on April 6, 2009 has been entered.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1 and 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hellweg (US 6,463,974) and further in view of Schubert (US 2384402).

Hellweg teaches a wheel assembly having a runflat support member formed of an annular shell 3 and a pair of rings 4, 5, wherein the ends of said shell (flanged ends) are embedded within said rings. A fair reading of Hellweg further suggests that the annular shell can be formed of metal (see Background of Hellweg). Hellweg, however, is silent as to the inclusion of notches in the ends of said annular shell. In any event, it is well known to include notches or slots at the marginal ends of a wide variety of components in order to, among other things, eliminate wrinkling. Schubert provides one

example of such an arrangement in which notches are arranged at the marginal end portions of a similar flanged, metal component in order to prevent wrinkling and the buildup of stresses (Column 1). It is emphasized that the metal component of Schubert is extremely analogous to the annular shell of Hellweg in that both are curved or flanged metal components- the benefits of reduced wrinkling would be expected to result in the tire of Hellweg in view of Schubert. It is further noted that applicant similarly attributes the benefit of reduced wrinkling and reduced buildup of stresses due to the inclusion of notches. Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to include notches in the curved tire component (annular shell) of Hellweg.

As to the ends of the annular shell, the figures of Hellweg generally depict said ends as being significantly embedded in the respective rings. Furthermore, one of ordinary skill in the art at the time of the invention would not have formed the assembly such that the end portions are flush with the surfaces of the ring (equivalent to 100% coverage). Thus, the general disclosure of Hellweg suggests a significant amount of embedding without completely extending over the width of said rings and such a disclosure appears to be consistent with the broad range of the claimed invention.

It is further noted, regarding the ends, that (a) Hellweg teaches that openings in said rings may be at least one of a circumferential opening, a curved-shaped opening, and a negative profile (Column 3, Lines 45+) and (b) Hellweg teaches that the structure including a positive and negative profile can be simplified and can be formed more or less solely in the form of an angle of the outer wall regions of the ring body and a

corresponding receiver in the upper material layer (Column 10, Lines 1+). In view of this disclosure, one of ordinary skill in the art at the time of the invention would have found it obvious to form the rings with a horizontal opening, such that the ends of said shell would be axially oriented (such is consistent with the axially oriented flanges disclosed by Schubert).

Regarding the length of the notches, Schubert depicts the periodic inclusion of notches at the marginal end portions of a flanged, metal component. A fair reading of the reference suggests that the notches necessarily have some length and that said length is not significant as compared to the circumferential length of said tire component. One of ordinary skill in the art at the time of the invention would have readily appreciated the broad range of the claimed invention (between 1 and 15 mm) in view of the general disclosure noted above. It is emphasized that the notches are not included to define the predominant area of the end portions and thus, one of ordinary skill in the art at the time of the invention would have expected the notches to have a length in accordance to the claimed invention.

Also, with respect to the independent claim, Table 1 is not seen to provide a conclusive showing of unexpected results. In particular, one of ordinary skill in the art at the time of the invention would not have expected the notches to have a significant length and thus occupy a large area of the edge portions. It is evident that the notches must have some length and the results demonstrate, for example, that a relatively large notch length (17 mm) is not as effective as smaller lengths (although it is better than a "notchless" assembly- comparative example 1). Additionally, it is evident that an

increase in notch length would result in a reduction in tire weight (less material). Lastly, it is emphasized that the reference generally depicts a significant degree of embedding without completely extending over the width of said rings and such a disclosure appears to be consistent with the broad range of the claimed invention.

Also, with respect to claims 1 and 3, one of ordinary skill in the art at the time of the invention would not have expected the area of the notches to occupy a significant area of the edge portions (periodically included)- such an arrangement is consistent with the claimed relationship between the length of the notch and the alignment pitch. Also, applicant has not provided a conclusive showing of unexpected results for either of the claimed relationships. Lastly, with respect to claim 3, the connecting portion of Hellweg necessarily has a radius of curvature and the claim defines a broad range of values without providing a conclusive showing of unexpected results.

As to claims 4 and 5, Hellweg appears to suggest the use of metal to form said annular shell. While the reference fails to expressly disclose the type of metal, stainless steel represents one of the most common metallic materials used in a wide variety of applications/components, including tire components. Furthermore, the claimed breaking strengths are consistent with stainless steel (inherent property- approximately 860 MPa). Absent any conclusive showing of unexpected results, one of ordinary skill in the art at the time of the invention would have found it obvious to form the shell from a material having the claimed breaking strength.

***Response to Arguments***

4. Applicant's arguments filed April 6, 2009 have been fully considered but they are not persuasive.

Applicant argues that Schubert does not teach using "notches" for preventing wrinkling and eliminating compressive strains and instead, teaches preventing wrinkling and eliminating compressive strains through the use of dished areas. The examiner respectfully disagrees. As set forth in Column 2, Lines 10+, Schubert obtains the aforementioned benefits by arranging notches in the flange portions AND dish the form block between said notches. A fair reading of the reference suggests a method in which both techniques are used to reduce wrinkling and eliminate compressive strains. As currently drafted, the claims fails to exclude a forming method comprising notches AND a subsequent dishing step.

Applicant further contends that the claims require bent ends that extend in only the axial direction. As detailed above, (a) Hellweg teaches that openings in said rings may be at least one of a circumferential opening, a curved-shaped opening, and a negative profile (Column 3, Lines 45+) and (b) Hellweg teaches that the structure including a positive and negative profile can be simplified and can be formed more or less solely in the form of an angle of the outer wall regions of the ring body and a corresponding receiver in the upper material layer (Column 10, Lines 1+). In view of this disclosure, one of ordinary skill in the art at the time of the invention would have found it obvious to form the rings with a horizontal opening, such that the ends of said

shell would be axially oriented (such is consistent with the axially oriented flanges disclosed by Schubert- Column 2, Lines 10+).

Applicant points to Figure III of Schubert and argues that the reference includes ends with components that extend in two directions that are orthogonal to each other. The examiner respectfully disagrees. Schubert specifically describes embodiments comprising arcuate flanges that extend at right angles to the plane of the web (Column 2, Lines 10+). It appears that such a structure is substantially identical to that depicted by applicant in Figure 3 (bent end having width  $W_s$  is substantially perpendicular to the "non-bent" portion of the shell).

Lastly, applicant argues that the cited references alone, or in combination, fail to disclose or suggest the claimed ranges of the ratios  $L_n/L_p$  and  $W_n/W_s$ . First, regarding  $W_n/W_s$ , Schubert specifically describes embodiments in which each notch has a width that is at least 1.0 times the width of the bent portion (Column 2, Lines 29+), which substantially overlaps the broad range of the claimed invention. Second, while it is unclear if the drawings of Schubert are "working drawings", length  $L_p$  is depicted as being significantly greater than length  $L_n$  and such a design is seen to be consistent with the broad range of the claimed invention. The reference further teaches that the notch spacing is not critical (Column 2, Lines 35+). As such, one of ordinary skill in the art at the time of the invention would have found it obvious to form the assembly of Hellweg in view of Schubert in accordance to the claimed invention. Lastly, applicant has not provided a conclusive showing of unexpected results to establish a criticality for the either of the claimed ratios.

**Conclusion**

5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R. Fischer** whose telephone number is **(571) 272-1215**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on **(571) 272-1226**. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Justin Fischer  
/Justin R Fischer/  
Primary Examiner, Art Unit 1791  
April 8, 2009